

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A video recording apparatus comprising:

[[a]] TV signal decoding means for converting an input TV signal based on consistent with a predetermined TV broadcast protocol system into a predetermined digital video signal, the input TV signal having a first frame period;

[[a]] video encoding means for encoding, according to a second frame period that is shorter than the first frame period, the digital video signal into a video data stream [[in]] having a predetermined format;

a recording means for recording the video data stream to a recording medium;

a blanking information detecting means for detecting blanking textual data included in a predetermined horizontal scan period within a vertical blanking time interval of each frame of the TV signal; and

[[a]] controlling means for:

encoding the detected blanking textual data for into the video data stream, and

the controlling means inserting a null data code as blanking data textual data into an arbitrary a horizontal scan period within a vertical blanking interval of a frame in the video data stream when in case the video encoding means has inserted one inserts a first duplicate of a frame from the input TV signal into the video data stream, while the video data stream is encoded, as a

result of the difference between the first frame period and the second frame period in arbitrary timing correspondingly to the fact that the vertical sync period of the video data stream is shorter than that of the TV signal.

2. (Currently amended) The apparatus as set forth in claim 1, wherein the controlling means inserts the null code data as blanking data into the first duplicate frame inserted by the video encoding means.

3. (Currently amended) The apparatus as set forth in claim 2, wherein:
the predetermined TV signal system stipulates broadcast protocol requires
that in case when two successive frames of the input TV signal contain have identical control codes stated as textual data in horizontal scan periods within vertical blanking intervals of the two successive frames blanking data therein, respectively, a control corresponding to the control code should be done executed only once [[at]] by the TV signal decoding means; and

in case a when the first duplicate frame having been is inserted between
the two successive frames having the identical control codes inserted therein,
respectively, the controlling means inserts the control code as textual data blanking data
into the inserted first duplicate frame, and then inserts a null data code as textual data
blanking data into a horizontal scan period within a vertical blanking interval of a frame
following the inserted first duplicate frame.

4. (Currently amended) The apparatus as set forth in claim 1, further comprising a TV signal encoding means for converting, according to a third frame period that is shorter than the first frame period, the digital video signal into [[a]] an output TV signal based on consistent with a predetermined TV system broadcast protocol and outputting the TV signal resulted from the conversion,

wherein the controlling means inserting inserts a null data code as textual data blanking data into an arbitrary a horizontal scan period within a vertical blanking interval of a frame of the output TV signal when in case the TV signal encoding means inserts one a second duplicate of a frame of the input TV signal into the output TV signal, while converting the digital video signal to the output TV signal, as a result of the difference between the first frame period and the third frame period in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

5. (Currently amended) The apparatus as set forth in claim 4, wherein the controlling means inserts the null data code as textual data blanking data into the second duplicate frame inserted by the TV signal encoding means.

6. (Currently amended) The apparatus as set forth in claim 5, wherein:
the predetermined TV signal system stipulates broadcast protocol requires that in case when two successive frames of the output TV signal contain have identical control codes in horizontal scan periods within vertical blanking intervals of the two successive frames stated as blanking data therein, respectively, a control corresponding

to the control code should be done executed only once [[at]] by the TV signal decoding means; and

~~in case a when the second duplicate frame having been is inserted between the two successive frames having the identical control codes inserted therein, respectively, the controlling means inserts the control code as textual data blanking data into a horizontal scan period within a vertical blanking interval of the inserted second duplicate frame, and then inserts a null code data as blanking textual data into a horizontal scan period within a vertical blanking interval of a frame following the inserted second duplicate frame.~~

7. (Currently amended) A video recording apparatus comprising:

[[a]] TV signal decoding means for converting [[a]] an input TV signal ~~based on a predetermined consistent with a TV system broadcast protocol~~ into a predetermined digital video signal, the input TV signal having a first frame period;

[[a]] video encoding means for encoding, according to a second frame period that is longer than the first frame period, the digital video signal into a video data stream [[in]] having a predetermined format;

a recording means for recording the video data stream to a recording medium;

~~a blanking information detecting means for detecting blanking textual data included in a predetermined horizontal scan period within the vertical blanking time interval of each frame of the TV signal; and~~

[[a]] controlling means for:

encoding the detected blanking textual data for into the video data stream, and

~~the controlling means deleting, in case when the video encoding means encodes skips a first frame contained in the input TV signal, while encoding the video data stream, as a result of the difference between the first frame period and the second frame period with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the video data stream is longer than that of the TV signal, one the controlling means deletes a null data code from blanking data inserted in contained as textual data in a horizontal scan period within a vertical blanking interval of a frame following the deleted first skipped frame.~~

8. (Currently amended) The apparatus as set forth in claim 7, wherein the controlling means ~~further: deletes the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide~~

~~shifts back, frame-by-frame, textual data contained in horizontal scan periods within vertical blanking intervals of frames in the video data stream, positions including from the deleted first skipped frame to the frame having included from which the null data was deleted, each frame having the blanking data inserted therein.~~

9. (Currently amended) The apparatus as set forth in claim 7, further comprising a TV signal encoding means for converting, according to a third frame period that is

shorter than the first frame period, the digital video signal into [[a]] an output TV signal based on a predetermined consistent with a TV system broadcast protocol and outputting the TV signal resulted from the conversion,

wherein the controlling means deleting one when the TV signal encoding means skips a second frame contained in the input TV signal, while converting the digital video signal to the output TV signal, as a result of the difference between the first frame period and the third frame period, the controlling means deletes a null data code from the blanking data inserted in the contained as textual data in a horizontal scan period within a vertical blanking interval of a frame following the deleted second skipped frame in case the TV signal encoding means outputs the TV signal with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

10. (Currently amended) The apparatus as set forth in claim 9, wherein the controlling means further deletes the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide back shifts back, frame-by-frame, textual data contained in horizontal scan periods within vertical blanking intervals of frames in the output TV signal, positions including from the deleted second skipped frame to the frame from which having included the null data code was deleted, each frame having the blanking data inserted therein.

11. (Currently amended) A video recording method comprising the steps of:

supplying [[a]] an input TV signal based on a predetermined TV broadcast protocol, the input TV signal having a first frame period system;

converting the input TV signal into a predetermined digital video signal;

encoding, according to a second frame period that is shorter than the first frame period, the digital video signal into a video data stream [[in]] having a predetermined format;

detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal;

encoding the detected blanking textual data for into the video data stream; and

recording the video data stream to a recording medium[[,]]; and
inserting a for encoding the blanking data for the video data stream, null
code data being inserted as blanking as textual data into an arbitrary a horizontal scan
period within a vertical blanking interval of a frame in the video data stream when case
one a first duplicate of a frame from the input TV signal is has been inserted into the
video data stream, while the video data stream is encoded, as a result of the difference
between the first frame period and the second frame period in arbitrary timing-
correspondingly to the fact that the vertical sync period of the video data stream is
shorter than that of the TV signal.

12. (Currently amended) The method as set forth in claim 11, wherein the null data code is inserted as blanking data into the inserted first duplicate frame.

13. (Currently amended) The method as set forth in claim 12, wherein:

~~the predetermined TV signal system stipulates broadcast protocol requires that in case when two successive frames of the input TV signal contain have identical control codes in horizontal scan periods within vertical blanking intervals of the two successive frames stated as blanking data therein respectively, a control corresponding to the control code should be done executed only once at the TV signal decoding means; and~~

~~in case a when the first duplicate frame having been is inserted between the two successive frames having the identical control codes inserted therein, respectively, the control code is inserted as textual data blanking data into a horizontal scan period within a vertical blanking interval of the inserted first duplicate frame, and then a null data code is inserted as blanking data into a horizontal scan period within a vertical blanking interval of a frame following the inserted first duplicate frame.~~

14. (Currently amended) The method as set forth in claim 11, wherein: further comprising:

~~converting, according to a third frame period that is shorter than the first frame period, the digital video signal is converted into the an output TV signal based on the predetermined consistent with a TV system broadcast protocol; [[and]] the TV signal resulted from the conversion is outputted; and~~

~~for outputting the TV signal, inserting a null data is inserted as blanking data code into an arbitrary a horizontal scan period within a vertical blanking interval of~~

a frame of the output TV signal when in case one a second duplicate frame is inserted into the output TV signal, while the digital video signal is converted to the output TV signal, as a result of the difference between the first frame period and the third frame period in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.

15. (Currently amended) The method as set forth in claim 14, wherein the null data code is inserted as blanking data into the inserted second duplicate frame.

16. (Currently amended) The method as set forth in claim 15, wherein:
the predetermined TV signal system stipulates broadcast protocol requires that in case when two successive frames of the output TV signal have identical control codes contained in horizontal scan periods within vertical blanking intervals of the two successive frames stated as blanking data therein respectively, a control corresponding to the control code should be done executed only once at the TV signal decoding means; and

in case a when the second duplicate frame having been is inserted between the two successive frames having the identical control codes inserted therein, respectively, the control code is inserted as textual data blanking data into the inserted second duplicate frame, and then a null data code is inserted as textual data blanking data into a horizontal scan period within a vertical blanking interval of a frame following the inserted second duplicate frame.

17. (Currently amended) A video recording method comprising the steps of:

supplying [[a]] an input TV signal based on a predetermined TV system broadcast protocol, the input TV signal having a first frame period;
converting the input TV signal into a predetermined digital video signal;
encoding, according to a second frame period that is longer than the first frame period, the digital video signal into a video data stream [[in]] having a predetermined format;

detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal;

encoding the detected blanking textual data for into the video data stream;
and

recording the video data stream to a recording medium[[,]]; and
when a first frame contained in the input TV signal is skipped, while the video data stream is encoded, as a result of the difference between the first frame period and the second frame period, for encoding the blanking data for the video data stream, one deleting a null data code being deleted from blanking data inserted in contained in a horizontal scan period within a vertical blanking interval of a frame following the deleted first skipped frame in the video data stream in case the video data stream is encoded with one frame being deleted in arbitrary time correspondingly to the fact that the vertical sync period of the video data stream is longer than that of the TV signal.

18. (Currently amended) The method as set forth in claim 17, ~~wherein there is deleted the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide further including:~~

~~shifting back, frame-by-frame, textual data contained in horizontal scan periods within vertical blanking intervals of frames in the video data stream positions including from the deleted first skipped frame to the frame having included from which the null code was deleted data, each frame having the blanking data inserted therein.~~

19. (Currently amended) The method as set forth in claim 17, further comprising wherein:

converting, according to a third frame period that is shorter than the first frame period, the digital video signal is converted into the an output TV signal based on the predetermined consistent with a TV system broadcast protocol; and

outputting the TV signal resulted from the conversion is outputted; and
when a second frame contained in the input TV signal is skipped, while
the digital video signal is converted into the output TV signal, as a result of the
difference between the first frame period and the third frame period, for outputting the
TV signal, one deleting a null data null code is deleted from a horizontal scan period
within a vertical blanking interval of a the blanking data inserted in the frame following
the deleted second skipped frame in case the TV signal is outputted with one frame
being deleted in arbitrary timing correspondingly to the fact that the vertical sync period
of the output TV signal is shorted than that of the input TV signal.

20. (Currently amended) The method as set forth in claim 19, further including:
~~wherein there is deleted the null data that is the blanking data inserted in the frame following the deleted frame and is also nearest to the deleted frame, to thereby slide shifting back, frame-by-frame, textual data contained in horizontal scan periods within vertical blanking intervals of frames in the output TV signal positions including from the deleted second skipped frame to the frame from which having included the null was deleted data, each frame having the blanking data inserted therein.~~

21. (Currently amended) A video output apparatus comprising:

[[a]] TV signal decoding means for converting an input TV signal based on a predetermined consistent with a TV system broadcast protocol into a predetermined digital video signal, the input TV signal having a first frame period;

[[a]] TV signal encoding means for converting, according to a second frame period that is shorter than the first frame period, the digital video signal into [[a]] an output TV signal based on a predetermined consistent with a TV broadcast protocol system and outputting the TV signal resulted from the conversion;

a blanking information detecting means for detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal; and

a controlling means for:

encoding the detected blanking textual data for the output TV signal,

~~the controlling means inserting a null data as blanking data code into an arbitrary a horizontal scan period within a vertical blanking interval of a frame of the output TV signal when in case the TV signal encoding means inserts one a duplicate of a frame from the input TV signal into the output TV signal, while converting the digital video signal into the output TV signal, as a result of the difference between the first frame period and the second frame period in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.~~

22. (Currently amended) A video output apparatus comprising:

~~[[a]] TV signal decoding means for converting an input TV signal based on a predetermined consistent with a TV broadcast protocol system into a predetermined digital video signal, the input TV signal having a first frame period;~~

~~[[a]] TV signal video encoding means for converting, according to a second frame period that is shorter than the first frame period, the digital video signal into [[a]] an output TV signal consistent with a TV broadcast protocol video data stream in a predetermined format;~~

~~a blanking information detecting means for detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal; and~~

~~a controlling means for:~~

~~encoding the detected blanking textual data for the output TV signal, and~~

~~the controlling means deleting, in case when the TV signal encoding means skips a frame contained in the input TV signal, while the digital video signal is converted to the output outputs a TV signal, as a result of the difference between the first frame period and the second frame period, with one frame being deleted in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal, one the controlling means deletes a null data code from blanking data inserted contained in a horizontal scan period within a vertical blanking interval of a frame following the deleted skipped frame.~~

23. (Currently amended) A video output method comprising the steps of:

~~supplying [[a]] an input TV signal based on a predetermined TV broadcast protocol, the input TV signal having a first frame period system;~~

~~converting the input TV signal into a predetermined digital video signal;~~

~~detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal;~~

~~converting, according to a second frame period that is shorter than the first frame period, the digital video signal into [[a]] an output TV signal based on a predetermined a TV system broadcast protocol and outputting the TV signal resulted from the conversion;~~

~~encoding the detected blanking textual data for the output TV signal[[,]]; and~~

~~inserting a for outputting the TV signal, null code data being inserted as blanking data into an arbitrary a horizontal scan period within a vertical blanking interval of a frame of the output TV signal in case one when a duplicate frame is inserted into the output TV signal, while the digital video signal is converted into the output TV signal, as a result of the difference between the first frame period and the second frame period in arbitrary timing correspondingly to the fact that the vertical sync period of the output TV signal is shorter than that of the input TV signal.~~

24. (Currently amended) A video output method comprising the steps of:

supplying [[a]] an input TV signal based on a predetermined TV broadcast protocol, the input TV signal having a first frame period system;
converting the input TV signal into a predetermined digital video signal;
detecting blanking textual data included in a predetermined horizontal scan period within the a vertical blanking time interval of each frame of the input TV signal;

converting, according to a second frame period that is shorter than the first frame period, the digital video signal into [[a]] an output TV signal based on a predetermined TV system broadcast protocol and outputting the TV signal resulted from the conversion; and

encoding the detected blanking textual data for the output TV signal[[,]];
and

when a frame contained in the input TV signal is skipped, while the digital video signal is converted to the output TV signal, as a result of the difference between

the first frame period and the second frame period, deleting for outputting the TV signal,
one a null data code being deleted, in case the TV signal is outputted with one frame
being deleted in arbitrary time correspondingly to the fact that the vertical sync period of
the output TV signal is shorter than that of the input TV signal, from the blanking data
inserted contained in a horizontal scan period within a vertical blanking interval of a
frame following the deleted skipped frame.